

PRELIMINARY AMENDMENT

18. (Amended) The process as claimed in ~~any one of claims 13 to 17~~Claim 13, characterized in that the strip of soft magnetic material is covered in the amorphous state with a complex mixture consisting of solvents, polymer binders, aluminates, silicates and fluxes, in that the strip covered with the coating layer is dried, in that a plurality of coated and dried amorphous strips are produced, in that the plurality of coated amorphous strips are superposed, in that the coated amorphous strips undergo a first curing operation, in order to obtain an amorphous/polymer composite laminated strip, in that components are cut from the composite strip, in that the cut components are heat treated at a temperature allowing a nanocrystalline structure to develop in the amorphous strips and allowing the aluminate/silicate/flux mixture to vitrify, in order to obtain cut shaped components comprising laminated nanocrystalline layers and vitrified layers.

20. (Amended) The process as claimed in ~~any one of claims 1 to 19~~Claim 1, characterized in that that step in which the thin strip (1) is subjected to stresses is a mechanical cutting operation.

21. (Amended) The process as claimed in ~~any one of claims 1 to 19~~Claim 1, employing a step of chemically cutting a thin metal strip (30) coated on one of its sides with a coating layer (31) made of polymer material.

ABSTRACT OF THE DISCLOSURE

The invention concerns a treatment method which consists in coating at least one surface of a brittle thin metal strip (1) with a coating film (3, 3') comprising at least a polymer material, to obtain on the strip an adhering coat with a thickness ranging between 1 and 100 μm , modifying the working and breaking properties of the brittle thin metal strip (1); then carrying out a step wherein the brittle thin metal strip (1) is subjected to stresses, such as a cutting operation, on the brittle thin metal strip (1) coated with the film coating (3, 3'). The method is particularly useful for producing magnetic parts from strips or ribbons with nanocrystalline structure.

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5 **Process for the treatment of a thin brittle metal strip
and magnetic components produced from a strip made of a
nanocrystalline alloy**

10 The invention relates to a process for the treatment of a thin brittle metal strip and products obtained from the treatment of the strip, which may comprise forming operations such as a cutting operation. In particular, it relates to a process for obtaining components for magnetic use by cutting them from a metal strip having a nanocrystalline structure.

15 It has been proposed to manufacture thin strip of a magnetic alloy, and in particular an alloy having a high permeability, which has a structure mainly consisting of very fine grains in an amorphous matrix, the size of which grains may, for example, be between 1 and 100 nm. Such alloys are called nanocrystalline 20 alloys.

25 Nanocrystalline metallic materials are obtained, in the form of thin strip, for example having a thickness of around 20 μm , from amorphous strip or ribbon produced by casting and rapidly cooling a liquid metal on a cooled roll or between two cooled rolls. The amorphous strip or ribbon is heat treated by holding it at a temperature of around 550°C for a time of around one hour so that it develops a nanocrystalline structure within a substantial part, for example more 30 than 50%, of its volume.

35 This heat treatment may be preceded by prior heat treatments at lower temperatures, for example of around 200°C.

When magnetically soft iron-based alloys are cast, cooled and then heat treated, it is possible to obtain, from the strip in the nanocrystalline state, products such as magnetic circuit cores exhibiting excellent magnetic properties which cannot be generally